REMARKS

In the Office Action, claims 1-3, 5 and 9-11 were rejected under 35 USC §103(a) as being unpatentable over Meyer in view of Canada et al. Claims 12 and 14-21 are allowable. Claims 22-24 were indicated to be allowable if rewritten in independent form.

Claim 1 has been amended to include the additional feature of the data processor receiving data relating to the position of at lest one sensor at it moves with the exterior surface of the machine.

Both the Meyer and Canada et al cited patents relate to monitoring systems in which sensors are located on a stationary surface. In the case of the Meyer reference a vibration sensor senses the condition of bearings in a rotating machine and sends an alarm signal if surface defects are sensed. Thus a bearing defect signal is only generated when the output of the bearing monitoring circuit reaches a prescribed level for a predetermined interval.

A number of bearing monitor units are used and every unit is set to emit its own modulating frequency. A demodulator which is part of the central room equipment is able to determine the modulating frequency of the received signal and present this information to a fault locator to identify the piece of equipment with the fault condition or the number of the monitor unit at that location.

The Canada et al patent has a monitor to determine when an anomalous machine operating condition is present. As identified by the Examiner in column 6, sensors include flux and vibration sensors which may be incorporated within the motor 102 and at various locations within the motor 102. The outputs from these external sensors are interfaced with a monitor 100 by wires or by wireless means such as infrared data link.

The machine which is being monitored is a motor and there is nothing in the cited patent which suggests any sensors being located on the surface of the moving part of the motor.

Neither of the machines monitored by the monitoring systems of the cited patents in operation have moving particulate matter therein. Furthermore as the Examiner has correctly identified, neither patent discloses at least one sensor located on an exterior surface of the moving machine. Neither cited patent discloses a need to have a sensor on a moving part of a machine and this is not surprising as the sensors which are utilized in fixed positions provide all the sensed data which is required.

It is important that the moving machine of the claimed system of the present invention, in operation has moving particulate matter therein. Prior to the present invention, all sensors on such a moving machine were placed on a stationery structure because it was assumed that electrical sensing devices would not operate properly if fixed to part of the moving machine.

Thus in a minerals processing environment it would not have occurred to one of ordinary skill in the art to place sensors on moving machines as it would have been expected that sensors would have been damaged too easily and would not have been able to give meaningful accurate data.

The inventors however conceived the idea of developing a sensor which could be placed on the surface of the moving machine and were surprised with the information which was able to be detected about the particulate matter within the moving machine. It was discovered that information could be obtained on the location and amplitude of events occurring within the moving machine. Previously such information had not been obtained from conventional sensoring techniques.

The amendment which has been made to claim. 1 clarifies that the data processor receives data relating to the position of at least one sensor which moves on the moving machine. With this information it is possible to display information on the position of particular events occurring within the machine. Thus as an example where sensors are located around the circumference of a cylindrical machine, data relating to the position of the sensors can be used to obtain data on the position of events occurring within the machine as shown for example in Figures 4a and 4b. This information cannot be obtained with conventional sensoring techniques.

Based on the above it should be apparent that the prior art falls well short of the present invention and does not provide any information on how to build a system which could determine the location of events occurring within a moving machine having particulate matter therein. There is nothing in either document or any other cited document which would suggest the idea of placing sensors on the surface of a moving machine and monitoring the position of the sensors as the sensors move with the machine. As a result there is no disclosure of a display means wherein the output signals for display represent one or more parameters indicative of mechanical waves emitted from the machine over a predetermined period of time. Both monitoring systems for the cited references merely provide alarm signals when thresholds are reached and there is no displaying of any parameters indicative of what is happening within the machine over a period of time.

New claim 25 has been added to place the allowable subject matter of claim 22 in independent form.

Based on the foregoing amendments and remarks, it is respectfully submitted that the claims in the present application, as they now stand, patentably distinguish over the references cited and applied by the Examiner and are, therefore, in condition for allowance. A Notice of Allowance is in order, and such favorable action and reconsideration are respectfully requested.

However, if after reviewing the above amendments and remarks, the Examiner has any questions or comments, he is cordially invited to contact the undersigned attorneys.

Respectfully submitted,

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Date: October 28, 2004
JLS/dmt